

We claim:

1. A method for reducing inter element cross talk in a transmit mode of a diagnostic ultrasound array, the method comprising:

- (a) generating a first waveform for a first element, the first waveform having a first component operable to reduce crosstalk from a second waveform at a second element;
- (b) applying the first waveform to the first element; and
- (c) substantially simultaneously with (b), applying the second waveform to the second element.

2. The method of Claim 1 wherein the second waveform has a second component operable to reduce crosstalk from the first waveform at the first element.

3. The method of Claim 1 wherein (b) comprises:

- (b1) applying the first component as a separate waveform from a third component, the third component operable for ultrasound imaging; and
- (b2) combining the first and third component by application to the transducer.

4. The method of Claim 1 wherein (b) comprises:

- (b1) applying the first component as a separate waveform from a third component, the third component operable for ultrasound imaging; and
- (b2) combining the first and third component with a summer.

5. The method of Claim 1 wherein (a) comprises generating the first component and a third component as a single waveform, the third component operable for ultrasound imaging.

6. The method of Claim 1 further comprising:

(d) performing (a), (b) and (c) for each transmit waveform across a multi-channel transmit aperture.

7. The method of Claim 1 further comprising:

(d) determining a crosstalk characteristic from the first element to the second element, the second element adjacent to the first element; and

(e) generating the first component as a function of the crosstalk characteristic.

8. The method of Claim 7 wherein (d) comprises:

(d1) performing one of calculating and measuring the crosstalk characteristic for at least the first element; and

(d2) populating a matrix as function of the crosstalk characteristic.

9. The method of Claim 1 wherein (a) comprises generating the first component wherein the first waveform is modified from a desired imaging pulse to take account of crosstalk from the second element.

10. The method of Claim 1 further comprising:

(d) filtering the second waveform; and

(e) delaying the second waveform;

wherein at least one of the filtering and delaying is a function of a crosstalk characteristic and the first component comprises the filtered and delayed second waveform.

11. A method for reducing inter element crosstalk in a receive mode in a diagnostic ultrasound array, the method comprising:

(a) receiving a first signal at a first element;

(b) receiving a second signal at a second element; and

(c) modifying the first signal as a function of a crosstalk characteristic between the first and second elements, the modification operable to reduce crosstalk from the second signal.

12. The method of Claim 11 wherein (c) comprises:
 - (c1) filtering the second signal as a function of the crosstalk characteristic; and
 - (c2) adding the filtered second signal to the first signal.
13. The method of Claim 11 further comprising:
 - (d) performing one of calculating and measuring the crosstalk characteristic.
14. A system for reducing inter element crosstalk in a transmit mode, the system comprising:
 - a transducer array having first and second elements;
 - a first transmit beamformer channel having at least a first waveform generator, the first transmit beamformer channel connected with the first element;
 - a second transmit beamformer channel having at least a second waveform generator, the second transmit beamformer channel connected with the second element,wherein the first waveform generator is operable to generate a first waveform having a first component operable to reduce crosstalk from a second waveform generated by the second waveform generator.
15. The system of Claim 14 wherein the first transmit beamformer is operable to apply the first waveform to the first element substantially simultaneously with the second transmit beamformer applying the second waveform to the second element, the first component operable to reduce crosstalk in the first element from the second waveform applied to the second element.
16. The system of Claim 14 wherein the second waveform generator is operable to generate a second waveform having a second component operable to reduce crosstalk from the first waveform generated by the first waveform generator.
17. The system of Claim 14 wherein the first channel also comprises:

a third waveform generator operable to generate a third component, the third component operable for ultrasound imaging, wherein the first and third components are combined by one of:

application to the first element; and
a summer in the first channel.

18. The system of Claim 14 wherein the first waveform generator is operable to generate the first component and a third component as a single waveform, the third component operable for ultrasound imaging.

19. The system of Claim 14 further comprising transmit beamformer channels for each element of a transmit aperture, each transmit beamformer channel operable to generate a first signal for reducing crosstalk from other elements in addition to a second signal for ultrasound imaging.

20. The system of Claim 14 wherein the first beamformer channel further comprises:

a filter connected with the second beamformer channel for filtering the second waveform; and

a delay for delaying the filtered second waveform;

wherein at least one of the filtering and delaying is a function of a crosstalk characteristic and the first component comprises the filtered and delayed second waveform.

21. A method for reducing inter element crosstalk in a transmit mode in a diagnostic ultrasound array, the method comprising:

(a) generating a plurality of waveforms for a plurality of elements, respectively, in a transmit aperture;

(b) focusing a first component in the plurality of waveforms to at least a point along a beam; and

(c) providing a second component in the plurality of waveforms, the second component a function of one or more of the plurality of waveforms for one

or more adjacent elements, respectively, wherein the second component have uniform delays with respect to the second component of adjacent elements.

22. The method of Claim 1 wherein the first component is at least one of: delayed, filtered, phase shifted, inverted and combinations thereof of at least a second component of the second waveform.

23. The method of Claim 22 wherein the second waveform has a third component, the third component at least one of: delayed, filtered, phase shifted, inverted and combinations thereof of at least a part of the first waveform.